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properties made apparent to the people by successful cultivation and use, it would be esteemed there as here. If it became in the Southern States as common as it is here, it would at once render the common people independent of the Northwestern wheat fields, and furnish them with the cheapest means of living which they have ever known.

Possibly the experiment of raising this root has already been tried in our country. I am ignorant upon that point. But I can see no reason in soil or temperature why it might not be easily cultivated in Florida, Georgia, Alabama, Louisiana and Texas.

ASUNCION, PARAGUAY, July, 1889.

[See an article on this subject by Mr. H. W. Wiley in "Agricultural Science," ii. 256-260 (1880).—ED.]

Botanical Notes.

Note on Harfordia, Greene and Parry. The criticism contained in Botanical Notes, Proc. Cal. Acad. 2d series, i. 235, 236, ostensibly directed against the proposed separation of the genus *Harfordia*, Greene and Parry, from *Pterostegia*, F. and M., may be most satisfactorily answered by quoting the written opinion of the late Prof. Asa Gray in letters addressed to the writer, viz.: In letter of July 12, 1886, before receiving specimens: "As to *Harfordia* no doubt (without examination as to particulars) it is a good genus." In letter of July 19th, after receiving specimens: "I looked at the specimens sent and I should certainly have made a genus of it if it came in my way, *prima facie.* The separation of the sexes, and no involucre to the male, and shrubby stem, should indicate separation." C. C. PARRY.

Utricularia resupinata, B. D. Greene. In a recent examination of the Florida collections of the late Dr. A. P. Garber, I find this species under the name of "*Utricularia purpurea?* Walt. ?" accompanied by the following note: "Grows on low, open, flat ground, which is dry until the wet season (June) and then is covered with water and becomes a pond; flowers very fugacious; plant 1 to 2 inches high." The station at which it was obtained is Manatee, and the date of collection April, 1876. Its occurrence so far south, and on the western coast of Florida, is certainly remarkable. THOS. C. PORTER.

Note on Viola palmata. In the June number of the BULLETIN Dr. Northrop has a note on this species, regarding the irregularity of some of its forms. Its constant abnormal features offer a broad field of observation, for its botanical characters are certainly eminent for a constant irregularity. I have this season met with some remarkable ones, especially in the forma *striata*, which confirms me in the description I wrote several years ago, as follows:

Viola palmata, forma *striata* (streaked or spotted violet.) Four to eight inches high. Leaf cordate, frequently uniform, early ones entire, crenate, purple below near the base and glabrous, later ones becoming more and more clothed with hairs and taking on a lobed form as the season advances, or as the plant creeps up dry hillsides from damp and lower grounds. Flowers few or many, pure white, marked with purple lines or striæ, sometimes sprinkled with purple dots or splashed with large irregular or ragged purple spots, but the lines are always present. Petals vary much as to size and form, even in the same plant, sometimes one or more becomes greatly enlarged, other times one does not fully develop and remains dwarfed. Frequently the margins are irregularly cut, toothed or fringed, later flowers cleistogamous.

Sparingly near Freehold and in the northeastern part of New Jersey, Staten Island, and frequent in the vales and on the gneissic hillsides of Westchester County, N. Y.

I called this form *striata*, unwisely, perhaps, inasmuch as there is a species by that name. But the *striæ* are constant, and it seems to be the only stable character it has, and is therefore eminently expressive. O. R. WILLIS.

Gaylussacia resinosa, var. *leucocarpa.* In a recent number of Garden and Forest there is a note to the effect that plants of white fruited *Gaylussacia resinosa*, sent to the Arnold Arboretum last year by Mr. B. W. Westbrook, of Montague, N. J., bore a small quantity of fruit this season. It is yellowish-white with a pale crimson tinge on the side exposed to the sun. It is sweeter than the normally colored fruit.

A proposed new Genus of Cyperaceæ. In the "Botanisches Centralblatt," xxxix. 73, Herr Otto von Boeckeler describes the genus *Cylindrolepis* as closely related to *Cyperus.* The specimens on which it is based were collected by Dr. A. Rehmann in Natal and the Transvaal, South Africa.

Psoralea esculenta. Dr. T. F. Wilcox, U. S. A., sending specimens of the " Pomme Blanche " states that it is known about Ft. Niobrara, Neb., as " Bread-root," " Tim-chilla " and " Indian Turnip."

Reviews of Foreign Literature.

Structure of the vittæ in the fruit of Umbelliferæ.

In several numbers of the Bot. Zeitung for May and June is a series of short papers by Arthur Meyer on the origin of the partition walls which occur in the intercellular spaces of the fruit of the Umbelliferæ. These cavities are technically known as vittæ and contain the volatile oil which gives the aromatic flavor to many fruits of this order.

It has been noticed by other investigators that these oil cavities were lined by a certain substance, which in some cases has continued through the cavities in the form of partition walls. As the intercellular spaces are not supposed to contain protoplasm, out of which walls may be built in the regular normal manner, the author has undertaken to determine the origin and function of the walls peculiar to these passages. He first gives the morphology and chemistry of the wall as found in ripe fruits. In nearly all cases besides that lining the cavity, partition walls occur. These differ in form and shape in different species. As to their chemical nature, the results of the tests made incline one very strongly to the opinion that they are mainly formed of suberin. The development of the wall is followed from the moment when the secretions from the walls surrounding the cavity are given off in the form of a watery fluid together with tiny oil drops, to the formation of the perfect wall. This watery fluid, he claims, is the foundation of the wall, and that it differs entirely from protoplasm ; or as he puts it, from cytoplasma as used by Strasburger. That is, protoplasm without nucleus or chromatophores.

Special emphasis is laid on this point, as various other writers are inclined to consider this secretion as protoplasm which has penetrated the walls and found its way into the intercellular spaces, in the same manner in which the fine threads of protoplasm continue from cell to cell. Among these authors are mentioned Ber-